

	1	2	3	4	5	6	7	8	9	10	11
C. Leeuwin	10	—	9	—	1	4	10	—	15	10	32
Mt. Barker	11	—	9	—	—	3	10	—	8	4	10
Albany	10	—	8	—	1	4	10	—	11	7	33
Eclipse Is.	10	—	8	—	—	4	10	—	9	5	17

(The letters on the maps show the following localities: W., Wyndham; B., Broome; H., Hall's Creek; N. and NU., Nullagine; C., Carnarvon; PH., Peak Hill; P., Pindar; G., Geraldton; K. and KA., Kalgoorlie; NO., Northam; PE., Perth; NE., Newdegate; and KO., Kojonup.)

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AN EXPERIMENT IN SWALLOW COUNTING

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The movements of Welcome Swallows (*Hirundo neoxena*) in Australia have been the source of considerable discussion among bird watchers. Over the years there has been much theorising and conjecture. Close observers have long since suspected that the movements of this species do not follow a pattern parallel with that of the European Swallow (*Hirundo rustica*) whose seasonal migrations from the British Isles to Southern Africa and back have been plotted by the recovery of banded birds (*The Swallow*, p. 48, Hoskins and Newberry).

Furthermore, observations on Welcome Swallows appear to indicate that the species does not react to the approaching cold season in South-western Australia as it does in South-eastern Australia. In the South-west Welcome Swallows have been observed in numbers throughout the year. In Victoria and Tasmania bird observers consider that a northward movement occurs.

One evening in May, 1944, I witnessed a remarkable flight of Welcome Swallows at Rockingham in Queensland. Thousands of the birds, all moving in a northerly direction and flying at an altitude

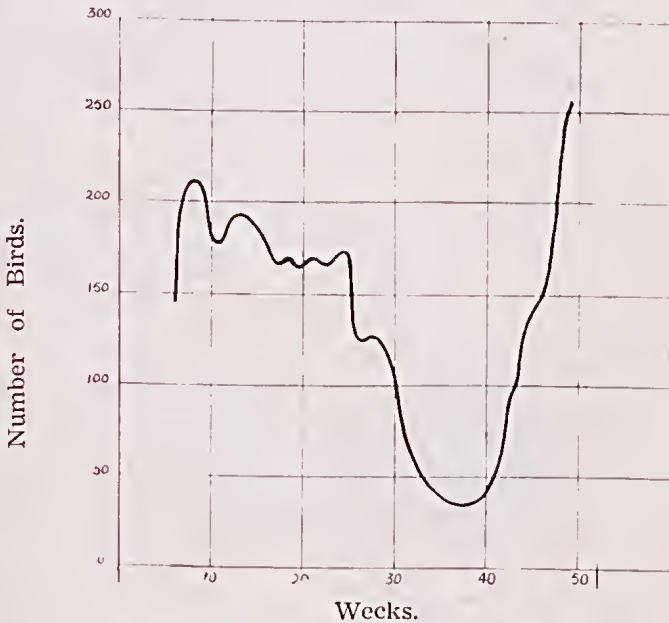
of from five to twenty feet, sped past for over an hour in a steady stream.

Surprisingly little evidence in the form of observational data has been presented on the subject, and until a proper system of banding is established the true story must no doubt remain unrevealed. But there are numerous other means of collecting data, which might be conducted with a minimum sacrifice of time, and require little in the way of technical skill. One of these is the systematic counting of Welcome Swallows, nightly, at their communal roosts.

The small town of Coorow, in approximately Latitude $29^{\circ} 30'$ S., and 54 miles inland from the west coast, offered an excellent opportunity for me to undertake such an experiment. Its buildings consist of a score of houses, a hotel, railway station, hall, school, three stores and two garages. As the number of roosting sites was strictly limited, counting the birds nightly became a fairly simple procedure.

I first began making counts with the aid of a torch on the evening of February 5, 1947, and after the first week the birds were always checked after dark. The counts were continued until December 6, 1947, and altogether 252 were made spread over a period of 285 days. One break of 7 consecutive days occurred during the school holidays in August, all other missed counts being only isolated days.

It became apparent during the first few weeks that the birds favoured the verandah eaves of two particular shops. Only on rare occasions did odd birds or pairs roost elsewhere, except during the breeding season.



Numbers of Swallows counted at Roost.

The figures from which the graphic representation was compiled were prepared as a weekly mean. The total number of individuals is shown against a time period in weeks. The most distinctive feature of the curve, it will be noticed, is a steady decline from about the 25th week (from 172 birds on June 16) to a minimum in the 37th week (29 birds on September 26), followed by a steady rapid increase.

The following selected extracts from field entries appear to lend some significance to this trend. "April 6, 1947. Clear cold day. Swallows under the verandah at the school were carrying feathers and showing signs of breeding behaviour." During June, several reports of Swallows having returned to their old nests about barns and other farm buildings in the vicinity were received. "July 22, 1947. Cold night. Six birds were found to be occupying or roosting on three nests under the hotel." Subsequent to this entry, I made a wider examination of old nests at night. Almost every nest was occupied by a pair of Swallows.

Young Swallows were observed on the wing on September 21, 1947, shortly before the date of minimum count on September 26, and from that time onward the roosting community rapidly increased. The lag here may be accounted for by the fact that young birds roosted for some days in the vicinity of the nest.

The broad implications were that the local swallow community did not undertake a "mass" winter migration; or, if such were the case their departure must more or less have been balanced by new arrivals. The gradual dissemination of the communal roosts from June 16, appears to have been caused by the commencement of the breeding season. Birds paired off and left the flock, or left the flock and paired off, to take up nesting territories on suitable sites throughout the neighbourhood. Young birds and their parents apparently caused the sharp upward trend as they returned to the communal roost. Increasing numbers were observed roosting with the others, but unfortunately no systematic count of the immature birds as such was made.

Excluding the unusual upward trend during the first week of counting—probably due to counting at dusk before all swallows had arrived—there is one other marked feature worthy of comment. The beginning of the year indicates a community of slightly over 200 birds whereas the end of the year shows a number slightly in excess of 250 birds. It seems unlikely that the population would decline by 33% of its approximate mean within a few weeks, as would be the case if the population was assumed to remain constant each year. Is this an indication of an increase in population due to a good year? The season was a good one generally with other species.

A regular series of observations over a number of years by bird watchers who are permanent residents would do much towards throwing some light upon the fluctuations of local bird populations. Unfortunately, having left the district I am no longer able to continue collecting information at Coorow, but here is a problem that might be solved by someone living in a well-favoured locality at little cost in time.